DOCUMENT RESUME

ED 350 447 CE 062 129

TITLE	Masonry Program Guide.
INSTITUTION	Georgia Univ., Athens. Dept. of Vocational Education.
SPONS AGENCY	Georgia State Dept. of Technical and Adult Education, Atlanta.
PUB DATE	90
CONTRACT	GA-89-110013
NOTE	122p.; For the program standards, see CE 062 130.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Apprenticeships; *Behavioral Objectives; Building Trades; Competency Based Education; Construction Materials; *Course Content; Course Descriptions; Employment Potential; Entry Workers; Job Skills; *Masonry; Postsecondary Education; Program Guides; State Curriculum Guides; Technical Education; Technical Institutes; Trade and Industrial Education; Two Year Colleges
IDENTIFIERS	Georgia

ABSTRACT

This masonry program guide presents the standard curriculum for technical institutes in Georgia. The curriculum addresses the minimum competencies for a masonry program. The general information section contains the following: purpose and objectives; program description, including admissions, typical job titles, and accreditation and certification; and curriculum model, including standard curriculum sequence and lists of courses. The next three sections contain the courses: general core courses (English, basic mathematics, interpersonal relations and professional development); fundamental occupational courses (introduction to masonry; basic bricklaying; masonry bonds and patterns; corners and leads; laying units to the line; pointing, cleaning, and caulking; blueprint reading and estimating); and specific occupational courses (footings, foundations, columns, and piers; wall construction; fireplaces and chimneys; ornamental masonry; masonry internship; tiling tools, equipment, and materials; surface preparation for setting tile; tile mortar mixes and application; laying out, cutting, and fitting tile; setting tile and accessories on floors and walls; grouting, cleaning, and curing tile). Each course consists of the following: course overview (description, competency areas, prerequisites, credit hours, contact hours); course outline with student objectives and class and lab hours; and resource list. An equipment list is appended. (YLB)

GEORGIA DEPARTMENT OF TECHNICAL AND ADULT EDUCATION

MASONRY PROGRAM GUIDE

MASONRY PROGRAM GUIDE

Developed and Produced
Under Contractual Agreement with

Office of Planning and Development
Department of Technical and Adult Education
Suite 660 South Tower
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1990

MASONRY PROGRAM GUIDE

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ACKNOWLEDGEMENTS

The project staff expresses its sincere appreciation to the Georgia Department of Technical and Adult Education, the masonry trade, and the state's technical institutes for their contribution to the development of this program guide. Kenneth Breeden and Robert Mabry of the Department of Technical and Adult Education provided initiative and direction for the project. Patt Stonehouse, the Director of Instructional Services for the Department of Technical and Adult Education provided invaluable assistance in the planning and monitoring of the project.

Without the close cooperation of members of the masonry trade in Georgia, this program guide would not have been possible. The Masonry State Technical Committee provided overall direction, identified areas of concern, provided occupational outlook and equipment recommendations, participated in task analysis review, and reviewed the curriculum in this guide. We would like to recognize each member of the Masonry State Technical Committee below.

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The Occupational Working Committee, composed of personnel from the technical institutes and other educational institutions, provided direct technical support and expertise in the development of the program guides. The members of this committee made the success of this endeavor possible. We would like to recognize the educators who participated on the Masonry Occupational Working Committee below.

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We would like to thank all the other business, industry, and educational leaders who contributed to the development of the program guide. We would also like to thank Madelyn Warrenfells and Thom Kirkpatrick for electronic publishing and editorial assistance, respectively.

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HOW TO USE THIS MANUAL

Summary

This manual is divided into:

Tabs - major divisions, physically separated by numbered tab dividers

Sections - divisions within a tab

Subjects - divisions within a section

Numbering System

Each document (Subject) has a unique 6-digit number. This number is divided into 3 sets of 2 digits which are separated by dashes.

Example:	04	-	02	-	03
	TAB		SECTION		SUBJECT

Locating a Document

Document numbers appear on the upper right hand corner of each page (see top of this page). To locate a subject:

1. Refer to the Table of Contents.
2. Note the document number for the subject.

   Example: 04-02-03

3. Turn to the tab divider marked 04 and within this tab find Section 02 and Subject 03.

Table of Contents

The table of contents (00-00-01) is intended to give a cover-to-cover overview of the manual contents and organization. It lists contents of a Tab to the Section and Subject level.

Amendments

Registered manual holders are instructed to keep their manuals up-to-date.

Manuals Document Transmittal	All new or revised documents are sent to the registered holder of the manual and are recorded on a Manuals Document Transmittal Form. Transmittals are numbered consecutively, and instructions for use are printed on the form.
Amendment Record	The registered holder of the manual records the receipt of all manual document transmittals on the Amendment Record. This record and instructions are found on the reverse side of the manual title page.

GENERAL INFORMATION

Introduction

Overview

Masonry is a program of study which is consistent with the philosophy and purpose of the institution. The program provides academic foundations in communications, mathematics, and human relations, as well as occupational fundamentals. Program graduates are well trained in the underlying fundamentals of masonry and are well prepared for employment and subsequent upward mobility.

The Masonry program is a specialized training program that provides the student with the knowledge and skills to become a competent mason in the modern masonry field. Skills application plays a vital role in the comprehensive Masonry program. Important attributes of successful program graduates are critical thinking, problem solving, and the ability to apply technology to the work requirement. This field has experienced rapid expansion and the trend is expected to continue for the foreseeable future.

The program structure acknowledges individual differences and provides opportunities for students to seek fulfillment of their respective educational goals. The program does not discriminate on the basis of race, color, national origin, religion, sex, handicapping condition, academic or economic disadvantage.

To assist each student to attain his or her respective potential within the program, both the instructor and the student incur an obligation in the learning process. The instructor is a manager of instructional resources and organizes instruction in a manner which promotes learning. The student assumes responsibility for learning by actively participating in the learning process.

This is a dynamic field which requires attention to current curriculum and up-to-date instructional equipment, materials, and processes. The Masonry program must promote the concept of change as the profession evolves. The need for nurturing the spirit of involvement and lifelong learning is paramount in the masonry field.

GENERAL INFORMATION

Introduction

Standard Curriculum

The Masonry program guide presents the standard Masonry curriculum for technical institutes in Georgia. This curriculum addresses the minimum competencies for a Masonry program. The competency areas included in a local Masonry program may exceed what is contained in this program guide, but it must encompass the essential competencies contained herein.

As changes occur in the Masonry program, this guide will be revised to reflect those changes. Proposed changes are first evaluated and approved by the local program advisory committee and then forwarded to the State Technical Committee for approval and inclusion in the state standard program guide.

This program guide is designed to relate primarily to that component of the Masonry industry best described as a one year apprentice mason.

GENERAL INFORMATION

Introduction

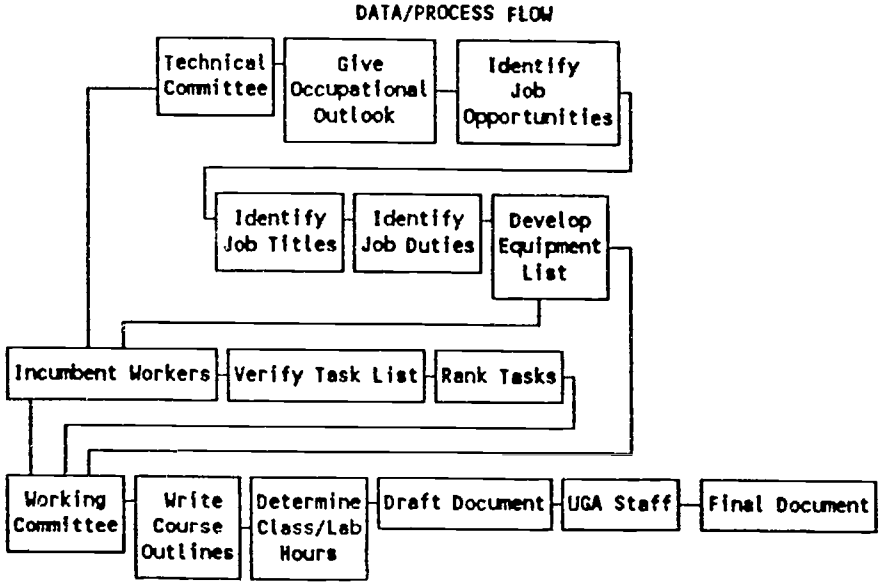
Developmental Process

The development of the Masonry program guide was based on the premise that the people in the industry can best determine program needs. With this in mind, representatives from businesses which would employ program graduates were asked to serve on a State Technical Committee to help identify the technical content and to provide overall guidance to ensure that the resulting program would produce graduates qualified for entry-level technical positions in the industry.

The State Technical Committee verified an occupational task list that had been compiled through extensive research. These representatives included workers who had actually performed the duties and tasks being verified.

Technical institutes which would implement the curriculum were also included in the developmental effort. Representatives from the technical institutes provided the expertise in teaching methodology unique to each discipline and developed the courses contained in this program guide.

The University of Georgia coordinated and directed the development of the curriculum and produced the final program guide. The role of each group in the developmental process is shown in the following diagram.



GENERAL INFORMATION

Introduction

Purpose and Objectives

Purpose

The purpose of the Masonry program is to provide educational opportunities to individuals that will enable them to obtain the knowledge, skills, and attitudes necessary to succeed in the masonry field.

The Masonry program provides educational opportunities regardless of race, color, national origin, religion, sex, age, handicapping condition, academic disadvantage, or economic disadvantage.

The Masonry program is intended to produce graduates who are prepared for employment equivalent to that of a one year apprentice brick and block mason or a one year apprentice tile setter. Program graduates are to be competent in the general areas of English, math, and interpersonal relations. Graduates are to be competent in the occupational areas of interpreting blueprints and specifications, material selection, masonry bonds and patterns, and laying masonry units to the line.

Graduates are to be competent in one of two occupational specializations. Graduates specializing as brick and block masons are to be competent in constructing masonry structures such as footings, foundations, walls, columns, piers, pilasters, fireplaces and chimneys, and various ornamental masonry structures. Graduates specializing as tile setters are to be competent in preparing surfaces, setting and curing tiles, and setting accessories.

Objectives

1. Provide current curriculum, instructional materials, and equipment (in accordance with available funding) which teach knowledge, skills, and attitudes appropriate to industry needs.

2. Provide educational facilities which foster learning and provide safe, healthy environments available and accessible to all students who can benefit from the program.

3. Provide academic instruction which supports effective learning within the program and which enhances professional performance on the job.

4. Provide employability skills which foster work attitudes and work habits that will enable graduates of the program to perform as good employees.

5. Nurture the desire for learning so that graduates will pursue their own continuing education as a lifelong endeavor.

6. Provide an educational atmosphere which promotes a positive self image and a sense of personal well being.

7. Provide education that fosters development of good safety habits.

8. Provide admission, educational, and placement services without regard to race, color, national origin, religion, sex, age, or handicapping condition.

9. Provide information to the public regarding the program that will facilitate recruitment and enrollment of students.

10. Promote good public relations via contacts and regular communications with business, industry, and the public sector.

11. Promote faculty and student rapport and communications to enhance student success in the program.

GENERAL INFORMATION

Program Description

Program Defined

The Masonry program is a sequence of courses that prepares students for careers in the masonry field. Learning opportunities develop academic, occupational, and professional knowledge and skills required for job acquisition, retention, and advancement. The program emphasizes a combination of masonry theory and practical application necessary for successful employment. Program graduates receive a Masonry diploma which qualifies them as a one year apprentice brick and block mason or a one year apprentice tile setter.

GENERAL INFORMATION

Program Description

Admissions

Admissions Requirements

Admission of new students to the Masonry program is contingent upon their meeting all of the following requirements:

a) attainment of 16 or more years of age;
b) achievement of the 7th grade level in reading, English, and math as shown on a statistically validated test; and
c) completion of application and related procedures.

Admission of transfer students to the Masonry program is contingent upon their meeting the following requirements:

a) regular admission and good standing at a regionally accredited diploma or degree granting institution; and
b) proper completion of application and related procedures.

Provisional Admission

A new student who does not meet the regular admission requirements of the program may be admitted on a provisional basis. The requirements for provisional admission are:

a) attainment of 16 or more years of age;
b) achievement of the 6th grade level in reading, English, and math as shown on a statistically validated test or recommendation by program faculty and designated admissions personnel on the basis of interview and assessment of student potential; and
c) completion of application and related procedures.

GENERAL INFORMATION

Program Description

Typical Job Titles

The Masonry program is assigned a (PGM) CIP code of (PGM) 46.0101 and specialization (SPC) CIP codes of: (SPC) 46.0102, brick and block mason; and (SPC) 46.0103, tile setter. The Masonry program is consistent with all other programs throughout the state which have the same (PGM) CIP code. The related D.O.T. job titles follow:

Bricklayer (const.)	861.381-018
Stonemason (const.)	861.381-038
Terrazzo worker	861.381-046
Tile setter (const.)	861.381-054

GENERAL INFORMATION

Program Description

Accreditation and Certification

This program must conform to the institutional accreditation requirements of the Southern Association of Colleges and Schools by meeting Commission on Colleges (COC) or Commission on Occupational Education Institutions (COEI) accreditation requirements and must not conflict with the accreditation criteria established by COC and COEI.

The program area does not have specific certification requirements but standards are established by the International Union of Bricklayers and Allied Craftsmen, International Masonry Institute Apprenticeship and Training, 815 15th St. NW., Washington, DC 20005 and the Associated General Contractors of America, INC., 1957 E St. NW., Washington, DC 20006.

GENERAL INFORMATION

Curriculum Model

Standard Curriculum

The standard curriculum for the Masonry program is set up on the quarter system. Technical institutes may implement the Masonry program using one of the sequences listed below or using a locally developed sequence designed to reflect course prerequisites and/or corequisites.

Course		Class Hours	Lab Hours	Weekly Contact Hours	Credits
SEQUENCE INCLUDING BRICK AND BLOCK MASON SPECIALIZATION					
FIRST QUARTER					
MAT 100	Basic Mathematics	3	0	3	3
MSN 100	Introduction to Masonry	2	3	5	3
MSN 101	Basic Bricklaying	1	9	10	4
MSN 103	Masonry Bonds and Patterns	1	9	10	4
		7	21	28	14
SECOND QUARTER					
ENG 100	English	5	0	5	5
MSN 104	Corners and Leads	0	7	7	2
MSN 105	Laying Units to the Line	1	13	14	5
MSN 106	Pointing, Cleaning, and Caulking	1	2	3	1
		7	22	29	13

Course		Class Hours	Lab Hours	Weekly Contact Hours	Credits
THIRD QUARTER					
MSN 108	Blueprint Reading and Estimating	3	7	10	5
MSN 109	Footings, Foundations, Columns, and Piers	1	7	8	3
MSN 111	Wall Construction	2	6	8	4
PSY 100	Interpersonal Relations and Professional Development	3	0	3	3
		9	20	29	15
FOURTH QUARTER					
MSN 113	Fireplaces and Chimneys	1	7	8	3
MSN 114	Ornamental Masonry	1	4	5	2
MSN 115	Masonry Internship	0	12	12	4
XXX xxx	Occcupational or Occupationally Related Electives	-	-	-	5
		2	23	25	14

Course		Class Hours	Lab Hours	Weekly Contact Hours	Credits
SEQUENCE INCLUDING TILE SETTER SPECIALIZATION					
FIRST QUARTER					
MAT 100	Basic Mathematics	3	0	3	3
MSN 100	Introduction to Masonry	2	3	5	3
MSN 101	Basic Bricklaying	1	9	10	4
MSN 103	Masonry Bonds and Patterns	1	9	10	4
		7	21	28	14
SECOND QUARTER					
ENG 100	English	5	0	5	5
MSN 104	Corners and Leads	0	7	7	2
MSN 105	Laying Units to the Line	1	13	14	5
MSN 106	Pointing, Cleaning, and Caulking	1	2	3	1
		7	22	29	13
THIRD QUARTER					
MSN 108	Blueprint Reading and Estimating	3	7	10	5
MSN 121	Tiling Tools, Equipment, and Materials	3	2	5	3
MSN 122	Surface Preparation for Setting Tile	3	2	5	3
MSN 123	Tile Mortar Mixes and Application	2	3	5	3
PSY 100	Interpersonal Relations and Professional Development	3	0	3	3
		14	14	28	17

Course		Class Hours	Lab Hours	Weekly Contact Hours	Credits
FOURTH QUARTER					
MSN 124	Laying Out, Cutting, and Fixing Tile	2	3	5	3
MSN 125	Setting Tile and Accessories on Floors and Walls	2	7	9	4
MSN 126	Grouting, Cleaning, and Curing Tile	2	2	4	2
XXX xxx	Occupational or Occupationally Related Electives	-	-	-	3
		6	12	18	12

GENERAL INFORMATION

Curriculum Model

General Core Courses

The general core courses provide students with a foundation in the basic skills which enable them to express themselves more clearly, both orally and in writing, and to perform the mathematical functions required in this occupation. The general core courses for the Masonry program are listed below.

ENG 100	English	5 Credits
MAT 100	Basic Mathematics	3 Credits
PSY 100	Interpersonal Relations and Professional Development	3 Credits

GENERAL INFORMATION

Curriculum Model

Fundamental Occupational Courses

The fundamental occupational courses provide students with a foundation in the areas of Masonry which are needed to progress to the more highly specialized courses in Masonry. The fundamental occupational courses are listed below.

MSN 100	Introduction to Masonry	3 Credits
MSN 101	Basic Bricklaying	4 Credits
MSN 103	Masonry Bonds and Patterns	4 Credits
MSN 104	Corners and Leads	2 Credits
MSN 105	Laying Units to the Line	5 Credits
MSN 106	Pointing, Cleaning, and Caulking	1 Credit

GENERAL INFORMATION

Curriculum Model

Specific Occupational Courses

The specific occupational courses build upon the fundamental occupational courses to provide students with the basic knowledge and skill required to work as a mason. The specific occupational courses offered in the Masonry program are listed below.

MSN 108	Blueprint Reading and Estimating	5 Credits
MSN 109	Footings, Foundations, Columns, and Piers	3 Credits
MSN 111	Wall Construction	4 Credits
MSN 113	Fireplaces and Chimneys	3 Credits
MSN 114	Ornamental Masonry	2 Credits
MSN 115	Masonry Internship	4 Credits
MSN 121	Tiling Tools, Equipment, and Materials	3 Credits
MSN 122	Surface Preparation for Setting Tile	3 Credits
MSN 123	Tile Mortar Mixes and Application	3 Credits
MSN 124	Laying Out, Cutting, and Fixing Tile	3 Credits
MSN 125	Setting Tile and Accessories on Floors and Walls	4 Credits
MSN 126	Grouting, Cleaning, and Curing Tile	2 Credits

GENERAL INFORMATION

Curriculum Model

Electives

Elective courses are provided to allow for the different levels of prior knowledge and skills brought to the classroom by students with diverse backgrounds, educational attainment, and specialized interests.

Decisions regarding the selection and appropriateness of any elective are made by the student after consultation with the instructor. Courses from other departments may be taken as electives when considered appropriate for a student's academic circumstances and career goals.

GENERAL INFORMATION

Curriculum Model

Areas of Specialization

The industry occupational committee identified two areas of specialization for which training is needed. In this section the courses required to gain skills are identified for each area of specialization.

After completion of the required 35 credit general core and fundamental technical courses, the student will select a specialization in brick and block masonry or tile setting. The courses included in the two specializations are listed below.

		Credits
Essential Brick and Block Mason Specialization Courses		21
MSN 109	Footings, Foundations, Columns and Piers	3
MSN 111	Wall Construction	4
MSN 113	Fireplaces and Chimneys	3
MSN 114	Ornamental Masonry	2
MSN 115	Masonry Internship	4
XXX XXX	Occupational or Occupationally Related Electives	5

OR

		Credits
Essential Tile Setter Specialization Courses		21
MSN 121	Tiling Tools, Equipment, and Materials	3
MSN 122	Surface Preparation for Setting Tile	3
MSN 123	Tile Mortar Mixes and Application	3
MSN 124	Laying Out, Cutting, and Fitting Tile	3
MSN 125	Setting Tile and Accessories on Floors and Walls	4
MSN 126	Grouting, Cleaning, and Curing Tile	2
XXX XXX	Occupational or Occupationally Related Electives	3

GENERAL CORE

ENG 100 - English

Course Overview

Course Description

Emphasizes the development and improvement of written and oral communications abilities. Topics include: basic grammar; language usage; vocabulary; idea development; spelling; outlining; sentence elements; sentence developments; paragraph development; revision; listening skills; reading skills; and locating, using, and organizing information. Homework assignments reinforce classroom learning.

Competency Areas

Basic Oral Communications
Listening Skills
Basic Grammar and Sentence Skills
Paragraph Development
Reading Skills

Prerequisite

Program admission level English and reading competency

Credit Hours

5

Contact Hours Per Week

Class - 5

Lab - 0

GENERAL CORE

ENG 100 - English

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BASIC ORAL COMMUNICATIONS		**15**	**0**
Telephone etiquette	Recognize effective telephone communication.		
Small group interaction	Participate in group interaction.		
Language registers	Recognize different levels of language.		
Oral presentations	Give oral presentations.		
	Interview and introduce a person.		
	Demonstrate a product or procedure.		
	Convey thoughts in a way that accomplishes desired results.		
	Role play a job-related situation.		
LISTENING SKILLS		**5**	**0**
Listening techniques	Summarize and paraphrase.		
Nonverbal communication	Take accurate notes that summarize material presented.		
	Interpret nonverbal clues.		
Directions	Follow directions.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BASIC GRAMMAR AND SENTENCE SKILLS		**10**	**0**
Nouns, pronouns, verbs, adverbs, adjectives	Use sentence parts correctly.		
Sentence patterns	Recognize basic sentence patterns.		
Sentence structure	Structure sentences effectively.		
Word choice, style, punctuation	Practice peer editing, preferably with word processing.		
PARAGRAPH DEVELOPMENT		**15**	**0**
Topic	Develop a topic sentence.		
Organization	Organize unified details for a paragraph.		
Paragraph elements	Write a paragraph which contains a narrow subject; a controlling idea; relevant, concrete details; and logical organization.		
Revision	Edit and revise paragraphs, preferably using a word processor.		
	Reinforce reading skills through paragraph revision.		
READING SKILLS		**5**	**0**
Library usage	Demonstrate the ability to use library cataloging system.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Reference usage	Reinforce reading skills through reference usage. Complete a library worksheet on locating various references. Demonstrate the ability to use indexes to find information in professional journals.		

GENERAL CORE

ENG 100 - English

Resources

Lewis, S. D., Smith, H., Baker, F., Ellegood, G., Kopay, C., & Tanzer, W. (1988). *Writing skills for technical students* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

VanAlstyne, J. S. (1986). *Professional and technical writing strategies*. Englewood Cliffs, NJ: Prentice Hall.

GENERAL CORE

MAT 100 - Basic Mathematics

Course Overview

Course Description

Emphasizes basic mathematical concepts. Topics include: mathematical operations with whole numbers, fractions, decimals, percents, ratio/proportion, and measurement using common English and metric units. Class includes lecture, applications, and homework to reinforce learning.

Competency Areas

Mathematical Operations
Fractions
Decimals
Percents
Ratio and Proportion
Measurement and Conversion

Prerequisite

Program admission level math competency

Credit Hours

3

Contact Hours Per Week

Class - 3

Lab - 0

GENERAL CORE

MAT 100 - Basic Mathematics

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
MATHEMATICAL OPERATIONS		**4**	**0**
Addition	Solve whole number problems using basic mathematical skills.		
Subtraction			
Multiplication			
Division			
Symbols	Recognize symbols and groupings and use them to solve hierarchy of operations problems with whole numbers.		
Order of operations			
Properties			
FRACTIONS		**11**	**0**
Definition of fractions	Define fractions.		
	Identify proper and improper fractions.		
Equivalent fractions			
Greatest common divisor (GCD)			

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Basic operations using fractions	Solve fraction problems using basic multiplication, division, addition, and subtraction operations.		
DECIMALS		**3**	**0**
Definition of decimals and place value			
Basic operations of mathematics with decimals	Solve mathematical problems using decimals.		
Round-off procedures			
Conversion of fractions to decimals and decimals to fractions	Recognize the relationship between fractions and decimals.		
PERCENTS		**3**	**0**
Definition	Solve problems using percents.		
Fractions, decimals, and percents			
Base-rate-part problems	Demonstrate skill in solving base-rate-percent problems.		
RATIO AND PROPORTION		**6**	**0**
Definition of ratio, rates, and proportions	Construct and solve problems involving ratios and proportions.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
MEASUREMENT AND CONVERSION		**3**	**0**
Define base units of length, area, volume, weight, temperature, and time	Determine proper dimensions. Solve basic measurement problems. Convert units within basic systems. Convert between English and metric systems.		

GENERAL CORE

MAT 100 - Basic Mathematics

Resources

Harter, J. H., & Beitzel, W. D. (1988). *Mathematics applied to electronics* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

Heywood, A. (1982). *Arithmetic: A programmed worktext.* Monterey, CA: Brooks/Cole.

Johnston, C. L., Willis, A. T., & Hughes, G. M. (1984). *Essential arithmetic* (4th ed.). Belmont, CA: Wadsworth.

Keedy, M. L., & Bittinger, M. L. (1983). *Introductory algebra* (4th ed.). Perdue, IN: Addison-Wesley.

Keedy, M. L., & Bittinger, M. L. (1985). *Essential mathematics* (4th ed.). Perdue, IN: Addison-Wesley.

Lewis, H. (1986). *Technical mathematics.* Albany, NY: Delmar.

Palmer, C. L., & Rachek, L. A. (1986). *Practical mathematics* (7th ed.). Minneapolis: McGraw-Hill.

Proga, R. (1987). *Basic mathematics* (2nd ed.). Boston: Prindle, Weber & Schmidt.

Washington, A. J., & Triola, M. F. (1988). *Technical mathematics* (3rd ed.). Poughkeepsie, NY: Benjamin/Cummings.

GENERAL CORE

PSY 100 - Interpersonal Relations and Professional Development

Course Overview

Course Description

Provides a study of human relations and professional development in today's rapidly changing world that prepares students for living and working in a complex society. Topics include: personal skills required for understanding of self and others; projecting a pi essional image; job acquisition skills such as conducting a job search, interviewing te niques, job application, and resume preparation; desirable job performance skills; and desirable attitudes necessary for job retention and advancement.

Competency Areas

Human Relations Skills
Job Acquisition Skills
Job Retention Skills
Job Advancement Skills
Professional Image Skills

Prerequisite

Provisional admission

Credit Hours

3

Contact Hours Per Week

Class - 3

Lab - 0

GENERAL CORE

PSY 100 - Interpersonal Relations and Professional Development

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
HUMAN RELATIONS SKILLS		**6**	**0**
Goal setting	Develop and set personal goals.		
Stress management	Diagnose and respond to own stress level.		
Behavior problems	Identify strategies to handle difficult behaviors effectively.		
Personal introductions	Make proper introductions.		
Problem solving/ decision making	Identify strategies to solve problems/make decisions.		
JOB ACQUISITION SKILLS		**15**	**0**
Job search	Identify strategies to conduct a job search.		
Career goals	Develop and set career goals.		
Employment documents	Prepare letter of application.		
	Prepare resume/applications.		
	Prepare follow-up letters.		
Interviewing	Demonstrate interviewing techniques.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
JOB RETENTION SKILLS		**3**	**0**
Office relationships	Identify techniques used to work effectively with coworkers.		
Time management	Develop time management strategies.		
JOB ADVANCEMENT SKILLS		**3**	**0**
Performance appraisal	Demonstrate ability to accept counseling positively.		
	Demonstrate ability to negotiate promotion/salary increase.		
Supervisory chain	Explain chain of responsibility.		
PROFESSIONAL IMAGE SKILLS		**3**	**0**
Image	Project professional image.		
Attitude	Project professional attitude.		

GENERAL CORE

PSY 100 - Interpersonal Relations and Professional Development

Resources

DuBrin, A. G. (1988). *Human relations - A job oriented approach* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.

Milton, C. R. (1981). *Human behavior in organizations*. Englewood Cliffs, NJ: Prentice Hall.

Reynolds, C. *Dimensions in professional development* (3rd ed.). Cincinnati, OH: South-Western.

Rogers, C. R. (1981). *Human behavior in organizations*. Cincinnati, OH: South-Western.

Wilkes, M., & Crosswait, C. B. *Professional development--The dynamics of success* (3rd ed.). Atlanta: Harcourt Brace & Jovanovich.

Williams, C., Jr. (1982). *Human behavior in organizations*. Cincinnati, OH: South-Western.

FUNDAMENTAL OCCUPATIONAL

MSN 100 - Introduction to Masonry

Course Overview

Course Description

Provides instruction in the procedures and practices necessary for safe operation and use of tools, materials, and equipment in masonry. Topics include: orientation to the masonry field, general safety, masonry tools, masonry equipment, and masonry materials.

Competency Areas

Orientation to the Masonry Field
General Safety
Masonry Tools
Masonry Equipment
Masonry Materials

Prerequisite

Provisional admission

Credit Hours

3

Contact Hours Per Week

Class - 2

D.Lab - 2

P.Lab - 1

FUNDAMENTAL OCCUPATIONAL

MSN 100 - Introduction to Masonry

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
ORIENTATION TO THE MASONRY FIELD		**4**	**4**
Overview of masonry trade	Describe employment opportunities, work environment, and skills necessary in the masonry trade.		
GENERAL SAFETY		**4**	**6**
Hazards	Identify safety hazards associated with the masonry trade.		
Tools	Describe use and maintenance of masonry tools.		
Equipment	Identify safety precautions associated with the use of masonry tools.		
	Identify shop and equipment safety rules.		
	Explain the need for shop and equipment safety rules.		
	Maintain the work area and leave in a safe condition.		
	Inspect work stations for safe working environment.		
	Identify shop, environmental, and equipment safety violations.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Emergency equipment/ stations and procedures	Locate emergency equipment and stations. Identify basic emergency first aid techniques. Identify and locate fire extinguishers. Describe the procedure for completing accident reports.		
MASONRY TOOLS		**4**	**8**
Trowel	Use a trowel.		
Level	Set up and adjust a builder's level.		
Hammer	Use a masonry hammer.		
Line	Use a masonry line.		
Transit	Use a masonry transit.		
Metal cutting	Describe methods for cutting metal.		
MASONRY EQUIPMENT		**4**	**8**
Saws	Operate masonry saws.		
Scaffolds	Inspect climbing equipment for safety.		
Material handling	Erect metal scaffolds.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
	Set up ladders.		
	Set up ladder jacks and planks.		
	Identify hand signals used in moving equipment and materials.		
MASONRY MATERIALS		**4**	**4**
Types and uses	Identify various masonry materials, their use, and storage.		
	Select materials.		
Storage procedures	Demonstrate effective methods of storing masonry materials, equipment, and tools.		

FUNDAMENTAL OCCUPATIONAL

MSN 100 - Introduction to Masonry

Resources

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills* (2nd ed.). Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

FUNDAMENTAL OCCUPATIONAL

MSN 101 - Basic Bricklaying

Course Overview

Course Description

Introduces basic skills in mixing mortar, spreading and applying mortor to masonry units, and cutting masonry units. Topics include: procedures to mix mortar, spread mortar, butter brick and block, and cut masonry units.

Competency Areas

Procedures to Mix Mortar
Spread Mortar
Butter Brick and Block
Cut Masonry Units

Prerequisite

Provisional admission

Credit Hours

4

Contact Hours Per Week

Class - 1

D.Lab - 2

P.Lab - 7

FUNDAMENTAL OCCUPATIONAL

MSN 101 - Basic Bricklaying

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
PROCEDURES TO MIX MORTAR		**3**	**15**
Hand	Mix correct proportions of sand, cement, and lime to spreading consistency by hand.		
Machine	Mix water, sand, and mortar to correct proportions using a mortar mixing machine.		
Shop	Mix shop mortar.		
SPREAD MORTAR		**3**	**30**
Trowel techniques	Spread mud for brick.		
	Spread mud for block.		
BUTTER BRICK AND BLOCK		**3**	**30**
Techniques	Butter the head joint for brick.		
	Butter the head joint for block.		
CUT MASONRY UNITS		**1**	**15**
Techniques	Cut with trowel.		
	Cut with brick hammer.		
	Cut with masonry saw.		

FUNDAMENTAL OCCUPATIONAL

MSN 101 - Basic Bricklaying

Resources

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

FUNDAMENTAL OCCUPATIONAL

MSN 103 - Masonry Bonds and Patterns

Course Overview

Course Description

Provides strategy and procedures to create basic bonds and patterns with various masonry units. Topics include: structural bonds and basic patterns.

Competency Areas

Structural Bonds
Basic Patterns

Prerequisite/Corequisite

MSN 101

Credit Hours

4

Contact Hours Per Week

Class - 1

D.Lab - 2

P.Lab - 7

FUNDAMENTAL OCCUPATIONAL

MSN 103 - Masonry Bonds and Patterns

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Lab
STRUCTURAL BONDS		**4**	**20**
1/3 bond	Lay 1/3 bond.		
1/2 bond	Lay 1/2 bond.		
3/4 bond	Lay 3/4 bond.		
Stack bond	Lay stack bond.		
BASIC PATTERNS		**6**	**70**
Running bond	Lay running bond in clay or concrete masonry pattern.		
Common bond	Lay common bond in clay or concrete masonry pattern.		
English bond	Lay English bond in clay or concrete masonry pattern.		
Flemish bond	Lay Flemish bond in clay or concrete masonry pattern.		
Stack bond	Lay stack bond in clay or concrete masonry pattern.		
Garden wall bond	Lay garden wall bond in clay or concrete masonary pattern.		

FUNDAMENTAL OCCUPATIONAL

MSN 103 - Masonry Bonds and Patterns

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1982). *Masonry skills* (2nd ed.). Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

FUNDAMENTAL OCCUPATIONAL

MSN 104 - Corners and Leads

Course Overview

Course Description

Develops additional skills in bonds and patterns and provides instruction in developing corners, leads, and jambs. Topics include: bonds/patterns, corner layout, lead development, and jamb construction.

Competency Areas

Bonds/Patterns
Corner Layout
Lead Development
Jamb Construction

Prerequisite

MSN 101

Credit Hours

2

Contact Hours Per Week

Class - 0

D.Lab - 1

P.Lab - 6

FUNDAMENTAL OCCUPATIONAL

MSN 104 - Corners and Leads

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BONDS/PATTERNS		**0**	**10**
Bonds	Identify bonding patterns used in corners and leads.		
Construction	Construct examples of commonly used masonry patterns.		
CORNER LAYOUT		**0**	**20**
Types	Identify types of corner layouts.		
Construction	Lay out a corner.		
LEAD DEVELOPMENT		**0**	**10**
Straight Rack back Toothing Round	Recognize bond being used including straight, rack back, tooth, and round.		
JAMB CONSTRUCTION		**0**	**30**
Straight	Identify correct block used for jambs. Construct jambs.		
Window	Identify hollow or metal window frame.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
	Identify type of jambs for control joints.		
	Set window.		
Door	Identify hollow, metal, or load-bearing door frames.		
	Identify type of jambs for control joints.		
	Set door frames.		

FUNDAMENTAL OCCUPATIONAL

MSN 104 - Corners and Leads

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

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FUNDAMENTAL OCCUPATIONAL

MSN 105 - Laying Units to the Line

Course Overview

Course Description

Presents methods and techniques for laying masonry units to the line and spacing them correctly. Emphasis will be placed on laying basic brick and concrete block units. Topics include: basic brick and block units, special glass and glazed block units, manmade and natural architectural units, and joint tooling.

Competency Areas

Basic Brick and Block Units
Special Glass and Glazed Block Units
Manmade and Natural Architectural Units
Joint Tooling

Prerequisite

MSN 101

Credit Hours

5

Contact Hours Per Week

Class - 1

D.Lab - 2

P.Lab - 11

FUNDAMENTAL OCCUPATIONAL

MSN 105 - Laying Units to the Line

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BASIC BRICK AND BLOCK UNITS		**3**	**50**
Brick	Lay masonry units to the line.		
	Stock the wall.		
	Build a 4" brick wall section.		
Concrete block	Build a 6" block wall section.		
SPECIAL GLASS AND GLAZED BLOCK UNITS		**3**	**40**
Glass blocks	Lay special masonry units.		
	Lay a glass block wall section.		
Glazed blocks	Lay a glazed block wall section.		
MANMADE AND NATURAL ARCHITECTURAL UNITS		**2**	**20**
Plans	Determine local/state/other building codes applicable to use of manmade and natural architectural units.		
Manmade	Lay manmade architectural units to the line.		
Natural (stone)	Set stones.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
	Construct a stone wall section using raked joints.		
JOINT TOOLING		**2**	**20**
Concave joints	Tool concave joints in the wall sections already constructed.		
Convex joints	Tool convex joints in the wall sections already constructed.		
Rake joints	Tool rake joints in the wall sections already constructed.		
Squeeze joints	Tool squeeze joints in the brick sections already built.		
V joints	Tool V joints in the brick or block sections already built.		

FUNDAMENTAL OCCUPATIONAL

MSN 105 - Laying Units to the Line

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

FUNDAMENTAL OCCUPATIONAL

MSN 106 - Pointing, Cleaning, and Caulking

Course Overview

Course Description

Presents techniques for pointing, cleaning, and caulking masonry using commercial grade products. Topics include: pointing, cleaning, and caulking.

Competency Areas

Pointing
Cleaning
Caulking

Prerequisite

Provisional admission

Credit Hours

1

Contact Hours Per Week

Class - 1

D.Lab - 1

P.Lab - 1

FUNDAMENTAL OCCUPATIONAL

MSN 106 - Pointing, Cleaning, and Caulking

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
POINTING		**3**	**4**
Hole repair	Point walls.		
CLEANING		**4**	**12**
Mechanical	Clean masonry mechanically with wire brushes, scrapers, or sand blasters.		
Chemical	Clean brickwork with muriatic acid solution or other commercially prepared chemicals.		
CAULKING		**3**	**4**
Materials	Select correct caulking material and application equipment.		
Methods	Caulk joints.		
	Caulk a door frame and a control joint.		

FUNDAMENTAL OCCUPATIONAL

MSN 106 - Pointing, Cleaning, and Caulking

Resources

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

FUNDAMENTAL OCCUPATIONAL

MSN 108 - Blueprint Reading and Estimating

Course Overview

Course Description

Provides instruction in the interpretation of architectural drawings, prints, and specifications needed to estimate and construct masonry structures according to plans. Topics include: building codes, specifications, drafting language, plot/plat plans, foundation/floor plans, elevations, details, sections, and materials estimation.

Competency Areas

Building Codes
Specifications
Drafting Language
Plot/Plat Plans
Foundation/Floor Plans
Elevations
Details
Sections
Materials Estimation

Prerequisites/Corequisites

MAT 100, MSN 101, and program admission

Credit Hours

5

Contact Hours Per Week

Class - 3

D.Lab - 2

P.Lab - 5

FUNDAMENTAL OCCUPATIONAL

MSN 108 - Blueprint Reading and Estimating

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BUILDING CODES		**4**	**0**
Local codes	Interpret local building codes.		
State codes	Interpret state building codes.		
Other codes	Explain the differences between applications of local, state, and national building codes.		
SPECIFICATIONS		**4**	**0**
Specifications	Explain the terminology and materials in a specifications list. Explain the role of specifications in relation to blueprints.		
DRAFTING LANGUAGE		**4**	**10**
Lines	Describe the meaning of blueprint lines.		
Symbols	Describe the meaning of blueprint symbols.		
Views	Describe the meaning of blueprints in respect to building placement on the site.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
PLOT/PLAT PLANS		**2**	**10**
Plots/plats	Interpret the site plan.		
FOUNDATION/FLOOR PLANS		**2**	**10**
Foundation plans	Interpret foundation plans to the layout of the building and construct the footers and foundation.		
Floor plans	Interpret floor plans to layout of the interior and exterior walls, placement of door frames, steps, windows, and other architectural elements.		
ELEVATIONS		**2**	**10**
Elevations	Identify the north, south, east, and west (front, rear, and sides) elevations from a blueprint for an overall view of building.		
DETAILS		**2**	**10**
Details	Find details on a set of plans. Use details on a set of plans to install a given architectural feature or device.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
SECTIONS		**2**	**10**
Wall	Recognize wall sections on a set of plans.		
	Use information from sections on a set of plans to build a wall.		
MATERIALS ESTIMATION		**8**	**10**
Materials	Estimate concrete based on a set of plans.		
	Estimate concrete blocks, bricks, wall ties, mortar, sand, reinforcing, equipment, and other materials and accessories based on a set of plans.		
Labor	Estimate cost of labor and overhead based on a set of plans.		

FUNDAMENTAL OCCUPATIONAL

MSN 108 - Blueprint Reading and Estimating

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 109 - Footings, Foundations, Columns, and Piers

Course Overview

Course Description

Introduces methods for site layout and techniques for construction of footings and foundations to include moisture control. Topics include: site layout, footings, foundations, retaining walls, columns and piers, and waterproofing.

Competency Areas

Site Layout
Footings
Foundations
Retaining Walls
Columns and Piers
Waterproofing

Prerequisites/Corequisites

MSN 105, MSN 108

Credit Hours

3

Contact Hours Per Week

Class - 1

D.Lab - 2

P.Lab - 5

SPECIFIC OCCUPATIONAL

MSN 109 - Footings, Foundations, Columns, and Piers

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
SITE LAYOUT		**2**	**12**
Layout techniques	Establish elevation reference points from bench mark.		
	Establish footing grades.		
	Locate and square corners.		
	Set grade stakes.		
Bench marks and batter boards	Lay out buildings using transit.		
	Install batter boards.		
FOOTINGS		**1**	**12**
Construction procedures	Construct forms and determine grade for footings.		
	Pour concrete.		
	Screed concrete.		
	Finish concrete.		
	Build footings.		
Anchors	Install anchor bolts according to plans.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
FOUNDATIONS		**2**	**12**
Foundation walls	Lay concrete blocks.		
Piers	Build walls according to plans using either bricks or blocks.		
Vents	Construct openings in walls for vents and access.		
Access openings			
RETAINING WALLS		**2**	**12**
Construction	Construct a retaining wall to specifications and plans.		
COLUMNS AND PIERS		**1**	**12**
Columns	Construct columns to meet designated specifications.		
Piers	Construct piers to meet designated specifications.		
WATERPROOFING		**2**	**10**
Materials	Select appropriate material for each waterproofing procedure.		
Application procedures	Apply moisture control material to effectively stop moisture flow.		
	Stop leaks using hydraulic plugs.		

SPECIFIC OCCUPATIONAL

MSN 109 - Footings, Foundations, Columns, and Piers

Resources

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 111 - Wall Construction

Course Overview

Course Description

Includes information for planning and building various types of masonry walls including reinforcement and finishing techniques. Topics include: types of walls, pilasters, bonding/ties, expansion and control joints, prefabricated units, reinforcements, flashing, and parapets.

Competency Areas

Types of Walls
Pilasters
Bonding/Ties
Expansion and Control Joints
Prefabricated Units
Reinforcements
Flashings
Parapets

Prerequisites

MSN 103, MSN 104, MSN 105

Corequisites

MSN 108, MSN 109

Credit Hours

4

Contact Hours Per Week

Class - 2

P.Lab - 6

SPECIFIC OCCUPATIONAL

MSN 111 - Wall Construction

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
TYPES OF WALLS		**6**	**15**
Cavity	Build partitions.		
	Tie walls together using anchors.		
Veneer	Gauge masonry walls with measuring devices.		
	Contruct sills.		
	Install wall ties.		
	Install flashing.		
Solid	Raise foundations.		
	Install foundation vents and beam pockets.		
Corbels	Form corbels.		
PILASTERS		**2**	**10**
Types	Construct walls containing pilasters.		
Construction techniques	Construct piers.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
BONDING/TIES		**2**	**8**
Bonding	Install anchor bolts in concrete blocks.		
	Apply expansion compound to an exterior wall.		
Types of ties	Tie walls together using anchors.		
EXPANSION AND CONTROL JOINTS		**2**	**10**
Expansion joints	Apply expansion compound to an exterior wall.		
Control joints	Construct a control joint using elastomeric seal.		
	Construct a control joint using caulking compound.		
	Construct a control joint using Z-tie method.		
	Construct a control joint using gasket method.		
	Construct a control joint using tongue-and-groove block.		
	Construct a control joint using greased-wire method.		
	Construct a control joint using rake-and-caulk method.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
PREFABRICATED UNITS		**2**	**5**
Types	Identify precast concrete or clay masonry unit walls.		
Installation	Install concrete or clay masonry unit walls.		
REINFORCEMENTS		**2**	**5**
Vertical	Raise foundations.		
	Tie doors to walls using anchors.		
	Reinforce brick masonry.		
	Tie walls together using anchors.		
Horizontal	Make reinforced lintels.		
	Place beams.		
	Set lintels.		
FLASHINGS		**2**	**5**
Materials	Identify and select appropriate flashing materials.		
Procedures	Install flashings.		
	Construct weep holes.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
PARAPETS		**2**	**2**
Construction procedures	Calculate pitch using a framing square. Calculate runs of rakes using a framing square.		

SPECIFIC OCCUPATIONAL

MSN 111 - Wall Construction

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 113 - Fireplaces and Chimneys

Course Overview

Course Description

Provides instruction in the design and construction of fireplaces and chimneys. Topics include: types of design, foundation plans, firebox types, mantle/hearth designs, chimney types, and fireplace inserts.

Competency Areas

Types of Design
Foundation Plans
Firebox Types
Mantle/Hearth Designs
Chimney Types
Fireplace Inserts

Prerequisite

MSN 106, MSN 108, MSN 109

Credit Hours

3

Contact Hours Per Week

Class - 1

D.Lab - 1

P.Lab - 6

SPECIFIC OCCUPATIONAL

MSN 113 - Fireplaces and Chimneys

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
TYPES OF DESIGN		**2**	**12**
Brick-o-lator fireplace	Describe and explain the function of parts of fireplaces and chimneys.		
Conventional fireplace	Identify the functions and materials of conventional fireplaces.		
	Describe how a fireplace works.		
Conventional fireplace with two openings	Identify the functions and materials of a conventional fireplace with two openings.		
	Identify flues and dampers for conventional fireplaces with two openings.		
Conventional fireplace with three openings	Select proper flue linings sizes for conventional fireplaces with three openings.		
Outdoor fireplace	Construct outdoor fireplaces.		
FOUNDATION PLANS		**2**	**10**
Requirements	Interpret foundation plans.		
FIREBOX TYPES		**1**	**12**
Types	Describe ash dumps.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
	Assist in the installation of ash dumps.		
	Describe clean-out doors.		
	Identify placement of dampers.		
	Describe basic layout of firebricks in fireboxes.		
	Assist in the installation of log lighters.		
	Provide outside air source.		
MANTLE/HEARTH DESIGNS		**1**	**10**
Mantles	Identify the construction of different mantle styles.		
Hearths	Identify the construction of different hearth styles.		
	Assist in the constuction of hearths.		
CHIMNEY TYPES		**2**	**14**
Flue	Set flue linings and thimbles.		
	Fireproof walls.		
FIREPLACE INSERTS		**2**	**12**
Installation	Assist in the installation of fireplace inserts.		

SPECIFIC OCCUPATIONAL

MSN 113 - Fireplaces and Chimneys

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 114 - Ornamental Masonry

Course Overview

Course Description

Provides experience in the design and construction of selected ornamental masonry structures. Topics include: materials and construction techniques.

Competency Areas

Materials
Construction Techniques

Prerequisite

MSN 111

Credit Hours

2

Contact Hours Per Week

Class - 1

D.Lab - 1

P.Lab - 3

SPECIFIC OCCUPATIONAL

MSN 114 - Ornamental Masonry

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
MATERIALS		**5**	**10**
Terrazzo	Explain the process of installing terrazzo.		
Tile	Describe the process of installing floor tile on a concrete base.		
Marble	Explain how to install marble pieces.		
Stucco	Explain how to apply stucco to the different types of surfaces.		
Stone	Set stones.		
	Construct a section of stone wall using stone panels with raked joints.		
	Lay out and construct a section of wall using rubble with bondstones.		
CONSTRUCTION TECHNIQUES		**5**	**30**
Paving	Explain the construction of a masonry driveway.		
	Explain the construction of a masonry floor.		
	Explain the construction of a masonry walk.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Arches	Explain the construction of brick arches.		
Steps	Explain the construction of a flight of steps.		
	Assist in the construction of a flight of steps.		
Ornamental walls	Lay a section of an ornamental lattice pattern wall.		
	Construct a section of an ornamental masonry wall.		
	Construct a sample 5' X 5' panel with wall bond, random-coursed sandstone.		
Prefabricated structures	Construct planters.		
	Construct water fountains.		
Repair	Repair masonry work.		

SPECIFIC OCCUPATIONAL

MSN 114 - Ornamental Masonry

Resources

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 115 - Masonry Internship

Course Overview

Course Description

Provides experience necessary for further professsional development in masonry skills and theory. Emphasis will be placed on attaining development equivalent to that of a one year apprentice mason. The requirements for this course may be met in a laboratory setting or in a combination of laboratory setting and approved internship settings in industry. Topics include: blueprint reading and estimation; safety; tools, materials, and equipment; corners and leads; footings, foundations, piers, and columns; wall construction; fireplaces and chimneys; ornamental masonry; and pointing, cleaning, and caulking.

Competency Areas

Blueprint Reading and Estimating
Safety
Tools, Materials, and Equipment
Corners and Leads
Footings, Foundations, Piers, and Columns
Wall Construction
Fireplaces and Chimneys
Ornamental Masonry
Pointing, Cleaning, and Caulking

Prerequisites

ENG 100, MSN 111, PSY 100

Corequisite

MSN 113

Credit Hours

4

Contact Hours Per Week

Class - 0

O.B.I. - 12

SPECIFIC OCCUPATIONAL

MSN 115 - Masonry Internship

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours OBI
BLUEPRINT READING AND ESTIMATING		**0**	**10**
	Apply knowledge of building codes, specifications and plans, elevations, details, blueprint reading, and estimating to the job.		
SAFETY			**(120)**
	Apply safety habits involving hazards, tools and equipment, emergency procedures, and the application of all OSHA regulations.		
TOOLS, MATERIALS, AND EQUIPMENT			**(120)**
	Apply basic masonry skills.		
CORNERS AND LEADS		**0**	**10**
	Apply knowledge of bonds, corners, lead development, and jamb construction.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours OBI
FOOTINGS, FOUNDATIONS, PIERS, AND COLUMNS		0	20
	Apply knowledge of layout, batter boards, footer construction, foundation and retaining walls, columns, and piers.		
WALL CONSTRUCTION		0	50
	Apply knowledge of types of wall construction, pilasters, bonding, and expansion joints.		
FIREPLACES AND CHIMNEYS		0	10
	Apply knowledge of fireplace design, foundation plans, firebox and chimney types, mantle and hearth designs, and fireplace inserts.		
ORNAMENTAL MASONRY		0	10
	Apply knowledge of qualities and installation of materials such as terrazzo, tile, marble, stucco, and stone, as well as ornamental use of masonry drives, walls, arches, steps, pattern walls, and prefabricated structures and repair.		
POINTING, CLEANING, AND CAULKING		0	10
	Apply knowledge of cleaning and repair of masonry and caulking skills.		

SPECIFIC OCCUPATIONAL

MSN 115 - Masonry Internship

Resources

Ball, J. E. (1980). *Practical problems in mathematics for masons* (2nd ed.). Albany, NY: Delmar.

Feirer, J. L., & Gilborn, R. (1989). *Residential masonry*. Mission Hills, CA: Glencoe.

Kreh, R. (1979). *Safety for masons*. Albany, NY: Delmar.

Kreh, R. (1982). *Masonry skills*. Albany, NY: Delmar.

Maguire, B. W. (1978). *Masonry and concrete*. Reston, VA: Reston.

Putnam, M. (1988). *Modern masonry*. New York: Harcourt Brace Jovanovich.

Toenjes, L. P. (1989). *Residential printreading*. Homewood, IL: American Technical.

SPECIFIC OCCUPATIONAL

MSN 121 - Tiling Tools, Equipment, and Materials

Course Overview

Course Description

Presents types of tools, equipment, and materials used in setting tile. Instruction in fundamental tool manipulation is provided. Topics include: orientation to tiling, general safety, tiling tools, tiling equipment, tiling materials, and materials estimation.

Competency Areas

Orientation to Tiling
General Safety
Tiling Tools
Tiling Equipment
Tiling Materials
Materials Estimation

Prerequisite/Corequisite

MSN 108

Credit Hours

3

Contact Hours Per Week

Class - 3

P.Lab - 2

SPECIFIC OCCUPATIONAL

MSN 121 - Tiling Tools, Equipment, and Materials

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
ORIENTATION TO TILING		**5**	**0**
History	Relate a history of tile setting.		
Current industry trends	Discuss current industry trends in tile setting.		
GENERAL SAFETY		**5**	**0**
General shop safety	Recognize and apply safe tiling procedures.		
Tool and material safety	Recognize and apply safe practices as they relate to tools and materials for tile setting.		
Hazardous materials	Identify tile setting products that could pose health risks.		
	Identify safety precautions to avoid tile setting health risks.		
TILING TOOLS		**5**	**3**
Mortar tools	Identify tile setting mortar tools.		
	Properly use tile setting mortar tools.		
Drilling and cutting	Identify drilling and cutting procedures for tile setting.		
	Drill and cut tile.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Layout and level	Identify layout and level for tile setting.		
	Use layout and level for tile setting.		
Special tools	Identify special tools for tile setting.		
	Use special tools for tile setting.		
TILING EQUIPMENT		**5**	**3**
Tile saw	Make various cuts using the tile saw.		
	Maintain the tile saw in a safe operating condition.		
TILI G MATERIALS		**5**	**4**
Setting materials	Identify organic mastics for tile setting.		
	Identify thinset adhesives for tile setting.		
Grout	Identify various types of grout for tile setting.		
Substrates	Identify the various surfaces to which tile is applied.		
Reinforcing	Identify various types of reinforcing used in the tile industry.		
Waterproofing	Identify various types of waterproofing used in the tile industry.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Cleaning agents	Identify various types of cleaning agents used in the tile industry.		
MATERIALS ESTIMATION		**5**	**10**
Tile	Estimate tile cost.		
Substrate material	Estimate substrate material cost for tile setting.		
Mortar	Estimate mortar cost for tile setting.		
Adhesives	Estimate adhesives cost for tile setting.		
Grout	Estimate grout cost for tile setting.		
Reinforcement	Estimate reinforcement cost for tile setting.		
Cleaning material	Estimate cleaning material cost for tile setting.		
Labor	Estimate labor cost for tile setting.		

SPECIFIC OCCUPATIONAL

MSN 121 - Tiling Tools, Equipment, and Materials

Resources

Byrne, M. (1987). *Setting ceramic tile*. Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual*. Los Angeles, CA: Building News.

SPECIFIC OCCUPATIONAL

MSN 122 - Surface Preparation for Setting Tile

Course Overview

Course Description

Presents the knowledge and skills necessary to prepare an area to receive mortar. Topics include: procedures to plumb, level, and square walls and floors; procedures to waterproof walls and floors; procedures for the formation and application of metal lath; provision of expansion joints; base subslab preparation; bonding agent application; and backer board installation.

Competency Areas

Procedures to Plumb, Level, and Square
Walls and Floors
Procedures to Waterproof Walls and Floors
Metal Lath Formation and Application
Expansion Joint Provision
Base Subslab Preparation
Bonding Agent Application
Backer Board Installation

Prerequisite/Corequisite

MSN 121

Credit Hours

3

Contact Hours Per Week

Class - 3

P.Lab - 2

SPECIFIC OCCUPATIONAL

MSN 122 - Surface Preparation for Setting Tile

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
PROCEDURES TO PLUMB, LEVEL, AND SQUARE WALLS AND FLOORS		**4**	**3**
Plumb	Check for plumb.		
	Adjust to plumb.		
Level	Check for level.		
	Adjust to level.		
Square	Check for square.		
	Adjust to square.		
PROCEDURES TO WATERPROOF WALLS AND FLOORS		**6**	**5**
Waterproof walls	Apply materials necessary to waterproof walls.		
Waterproof floors	Apply materials necessary to waterproof floors.		
Waterproof showers	Apply materials necessary to waterproof showers.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
METAL LATH FORMATION AND APPLICATION		**6**	**3**
Metal lath forming and shaping	Form and shape metal laths.		
Metal lath application	Apply metal lath to walls.		
	Apply metal lath to floors.		
EXPANSION JOINT PROVISION		**4**	**3**
Expansion joint products	Identify various products available for expansion material.		
Installation	Properly install expansion joints at correct locations.		
BASE SUBSLAB PREPARATION		**2**	**2**
Cleaning	Clean sublab in preparation for receiving setting bed.		
BONDING AGENT APPLICATION		**4**	**2**
Selection	Select proper bonding agent for tile setting.		
Application	Apply bonding agent to subslab.		
BACKER BOARD INSTALLATION		**4**	**2**
Selection	Select proper backer board for tile setting.		
Installation	Install backer board for tile setting.		

SPECIFIC OCCUPATIONAL

MSN 122 - Surface Preparation for Setting Tile

Resources

Byrne, M. (1987). *Setting ceramic tile*. Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual*. Los Angeles, CA: Building News.

SPECIFIC OCCUPATIONAL

MSN 123 - Tile Mortar Mixes and Application

Course Overview

Course Description

Includes the different materials and quantities used to mix and apply setting bed, scratch, float, and bond coats. Topics include: scratch coat, screed strips, float coat, and bond coat.

Competency Areas

Scratch Coat
Screed Strips
Float Coat
Bond Coat

Prerequisite/Corequisite

MSN 122

Credit Hours

3

Contact Hours Per Week

Class - 2

P.Lab - 3

SPECIFIC OCCUPATIONAL

MSN 123 - Tile Mortar Mixes and Application

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
SCRATCH COAT		**5**	**7**
Mortar	Mix and apply mortar needed for scratch coat.		
SCREED STRIPS		**3**	**5**
Spacing	Space screed strips for tile setting.		
Installation	Install screed strips for tile setting.		
Removal	Remove screed strips for tile setting.		
FLOAT COAT		**7**	**11**
Mortar	Mix mortar for float coat for tile setting.		
Application	Apply mortar to wall for tile setting.		
	Screed the wall for tile setting.		
	Resurface to eliminate irregularities for tile setting.		
BOND COAT		**5**	**7**
Mix materials	Mix various bond coat adhesives for tile setting according to manufacturer's specifications.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Application	Apply bond coat adhesives to wall according to manufacturer's specifications.		

SPECIFIC OCCUPATIONAL

MSN 123 - Tile Mortar Mixes and Application

Resources

Byrne, M. (1987). *Setting ceramic tile.* Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual.* Los Angeles, CA: Building News.

SPECIFIC OCCUPATIONAL

MSN 124 - Laying Out, Cutting, and Fitting Tile

Course Overview

Course Description

Develops the skills necessary to lay out, measure, and cut different shapes of tile and fit the pieces to finish a wall or floor. Topics include: layout and measurement procedures, tile nippers and snap cutters, tile saws, and rubbing stone tile-fitting techniques.

Competency Areas

Layout and Measurement Procedures
Tile Nippers and Snap Cutters
Tile Saws
Rubbing Stone Techniques

Prerequisite/Corequisite

MSN 123

Credit Hours

3

Contact Hours Per Week

Class - 2

P.Lab - 3

SPECIFIC OCCUPATIONAL

MSN 124 - Laying Out, Cutting, and Fitting Tile

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
LAYOUT AND MEASUREMENT PROCEDURES		**10**	**12**
Floor layout	Layout the floors to receive tile.		
Wall layout	Layout walls to receive tile.		
TILE NIPPERS AND SNAP CUTTERS		**4**	**9**
Tile nippers	Use tile nippers to make various cuts.		
Snap cutters	Use snap cutters to make various cuts.		
TILE SAWS		**5**	**5**
Preparation	Adjust tray to accommodate various angles.		
Operation	Use the tile saw to make various cuts and shapes.		
Maintenance	Maintain the tile saw in a safe operating condition.		
RUBBING STONE TECHNIQUES		**1**	**4**
Selection	Select proper grit of rubbing stone for tile setting.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Use	Use rubbing stone in the proper manner for tile setting.		

SPECIFIC OCCUPATIONAL

MSN 124 - Laying Out, Cutting, and Fitting Tile

Resources

Byrne, M. (1987). *Setting ceramic tile.* Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual.* Los Angeles, CA: Building News.

SPECIFIC OCCUPATIONAL

MSN 125 - Setting Tile and Accessories on Floors and Walls

Course Overview

Course Description

Develops the skills to accurately level, plumb, and align tile and accessories on floors and walls. Topics include: sanitary cove installation, floor tile, wall tile, and setting accessories.

Competency Areas

Sanitary Cove Installation
Floor Tile
Wall Tile
Setting Accessories

Prerequisite/Corequisite

MSN 124

Credit Hours

4

Contact Hours Per Week

Class - 2

P.Lab - 7

SPECIFIC OCCUPATIONAL

MSN 125 - Setting Tile and Accessories on Floors and Walls

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
SANITARY COVE INSTALLATION		**2**	**5**
Installation	Level and set sanitary cove.		
FLOOR TILE		**8**	**30**
Application	Apply tile to floor using various adhesives in selected patterns.		
WALL TILE		**8**	**30**
Application	Apply tile to walls using various adhesives in selected patterns.		
SETTING ACCESSORIES		**2**	**5**
Application	Set accessories to the wall.		

SPECIFIC OCCUPATIONAL

MSN 125 - Setting Tile and Accessories on Floors and Walls

Resources

Byrne, M. (1987). *Setting ceramic tile*. Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual*. Los Angeles, CA: Building News.

SPECIFIC OCCUPATIONAL

MSN 126 - Grouting, Cleaning, and Curing Tile

Course Overview

Course Description

Provides instruction in the skills needed to adequately fill, waterproof, clean, and cure tile joints to give a strong and pleasing finish. Topics include: grout mixes, grout application, tile cleaning, and tile curing.

Competency Areas

Grout Mixes
Grout Application
Tile Cleaning
Tile Curing

Prerequisite/Corequisite

MSN 125

Credit Hours

2

Contact Hours Per Week

Class - 2

P.Lab - 2

SPECIFIC OCCUPATIONAL

MSN 126 - Grouting, Cleaning, and Curing Tile

Course Outline

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
GROUT MIXES		**5**	**5**
Grout selections	Select proper grout for the type tile and installation.		
Mixing procedures	Mix grout.		
GROUT APPLICATION		**5**	**5**
Tools	Select appropriate tools to apply grout.		
Preparation	Prepare tiled walls and floors to receive grout.		
Application	Apply grout to floors and walls.		
TILE CLEANING		**5**	**5**
Cleaning materials selection	Select proper cleaning agents for removal of excess grout.		
Procedures	Use cleaning agents to clean floors and walls of excess grout and foreign materials.		
TILE CURING		**5**	**5**
Curing materials selection	Select proper curing agents for tile walls and floors.		

Recommended Outline	After completing this section, the student will:	Hours Class	Hours Lab
Procedures	Use curing agents to cure floors and walls.		

SPECIFIC OCCUPATIONAL

MSN 126 - Grouting, Cleaning, and Curing Tile

Resources

Byrne, M. (1987). *Setting ceramic tile.* Newton, CT: Tauton.

Lavenberg, G. N. (1979). *Ceramic tile manual.* Los Angeles, CA: Building News.

APPENDIX A

APPENDIX A

MASONRY

EQUIPMENT LIST

Bags, Tool
Blades, Carborundum
Blades, Diamond
Block Jointer
Bricklayer Jointer, Rake
Bricklayer Jointer, Round
Bricklayer Jointer, Sled Runner
Bricklayer Jointer, V
Bricklayer Jointer, Weather
Brick Sets
Brushes, Acid
Brushes, Bricklayer
Brushes, Wire, Combination Brush and Scraper
Brooms
Buckets
Cement Center Groovers
Cold Chisels
Cord, Extension
Corner Poles
Cotton Gloves
Crow Bars
Cutter, Bolt
Edgers, Cement
Flat Bed Barrow
Floats, Rubber
Fork Lift
Goggles
Hammers, Brick
Hawks, Plastering
Hoes, Mortar
Hoses - Rubber
Jacks, Scaffold
Jitterbug
Ladders
Level, Brass bound, Wood

Level, Contractors
Line Block
Line, Chalk
Line Levels
Line, Nylon
Line, Pins
Line Twigs
Manual Lift Pulley
Mortar Boards
Mortar Box
Mortar Mixer
Pick, Mattock
Pliers, Utility
Plugging Chisel
Plumb Bobs
Power Drill
Rope, Manila
Rules, Brickspacing
Rules, Modular
Safety Hats
Saw, Hand
Saw, Masonry
Saw, Portable Electric
Scaffolds
Screwdrivers, Flat - Blade
Screwdrivers, Phillips
Scutch
Sharp Shooter Shovel
Shovels, Round Point, Long Handle
Shovels, Square Point, Long Handle
Shovels, Square Point, Short Handle
Side Walk Scraper
Snips, Tin
Soap Stone
Speed Leads
Square, Framing
Star Drills
Steel Tape, 100'
Steel Tape, 50'
Stones, Rubbing, with Handles
Tile Markers

Tongs, Brick
Transit
Trowels, Brick
Towels, Cement Finishing
Trowels, Notch
Trowels, Plastering
Trowels, Pointed
Tuck Pointer, Assorted
Vise Grips
Wheelbarrows
Wrecking Bar
Wrench, Adjustable

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